

Technology: Past, Present, and Future

WHAT YOU NEED

- [History of Inventions](#)
ESHEET | WEBSITE
- [Learning about Inventions: Facts](#)
STUDENT ACTIVITY SHEET
- [Learning about Inventions: Facts Teacher Sheet](#)
TEACHER SHEET
- [History of Inventions](#)
STUDENT ACTIVITY SHEET

MATERIALS

- Pencil
- Ballpoint pen
- Coffee cup
- Eraser
- Calculator
- Sticky notes
- Paper clips
- Eyeglasses or sunglasses
- Battery
- Light bulb



PURPOSE

To broaden students' awareness of technology by examining inventions of the past and present and by learning how inventions inspire and lead to the development of other inventions.

CONTEXT

In this lesson, students examine a number of technological innovations that have occurred since the beginning of humanity. As they become familiar with these needs-based inventions, they are prompted to consider how they helped change the way people lived and how societies worked. As students gain an understanding of this ongoing social process, they should come to see how earlier innovations inspired and contributed to later and more modern ones.

As long as there have been people, there has been technology. On the whole, technology has been a powerful force in the development of civilization, all the more so as its link with science has been forged. Technology is an intrinsic part of a cultural system and it both shapes and reflects the system's values. (*Science for All Americans*, p. 25.)

In the broadest sense, technology extends our abilities to change the world: to cut, shape, or put together materials; to move things from one place to another; to reach farther with our hands, voices, and senses. We use technology to try to change the world to suit us better. The changes may relate to survival needs such as food, shelter, or defense, or they may relate to human aspirations such as knowledge, art, or control. But the results of changing the world are often complicated and unpredictable. (*Science for All Americans*, p. 25.)

Students at this level can become interested in comparing present technology with that of earlier times, as well as the technology in their everyday lives with that of other places in the world. They can imagine what life would be like without certain technology, as well as what new technology the future might hold. Reading about other civilizations or earlier times than their own will illustrate the central role that different technologies play. (*Benchmarks for Science Literacy*, p. 54.)

MOTIVATION

Ask students a number of open-ended questions intended to spark their interest and consider the key benchmark concepts. Questions may include:

- When I say the word technology, what kinds of things do you think of?

Students will naturally think mostly about high-tech machines like computers, video games, etc. The technique below will help to broaden their understanding of what technology encompasses.

After eliciting a number of responses, show and put on display before the class all or most of these items: pencil, ballpoint pen, coffee cup, eraser, calculator, sticky notes, paper clips, eyeglasses or sunglasses, battery, and light bulb. Then ask:

- Are any of these items technology? Why or why not?

After students have pondered all of the possibilities, indicate to them that all of the items before them are forms of technology, since technology is essentially anything that is made by humans to help them succeed in their environment. Point out for contrast that natural things like rocks, grass, leaves, wind, wood, etc., are not technology (but are often used to help humans build technology).

Continue their orientation and exploration by asking questions like these:

- Which of the forms of technology up here do you think is the oldest? Newest? Why?
- Which do you think was invented first, the pencil or the ballpoint pen? Why?
- Does anyone know when technology began?
- What do you think were some of the earliest inventions?
- How do you think, for example, that the wheel in ancient times compares with wheels today?
- In what ways has the wheel helped to change how people lived and continue to live day-to-day? Offer examples.

(Accept all answers, but ask students to support their views with explanations.)

DEVELOPMENT

Direct students to their [History of Inventions](#) student esheet, which they should use to explore an invention timeline on [The History of Inventions](#), which highlights a number of important human-made developments ranging from pottery (7900 B.C.) to the recent DVD player (1995).

Before students begin to explore the site, some form of explanation may be needed on what the timeline represents, how it works, and how to navigate around the resource

itself. First, explain that the inventions at the bottom of the screen are arranged by date of invention, ranging from early B.C. (Before Christ) to A.D. (Anno Domini). Second, point out that the scroll bars at the bottom of the screen can be used to go back and forth along the timeline to click on and read about the inventions. Third, encourage students to take notes when they click on an invention and read about it.

Once students have an adequate understanding of how the information is structured and how the site operates, have them begin by only focusing on the ancient inventions displayed. Let this include the six B.C. inventions ranging from the calendar (???? B.C.) to the swimming pool (2500 B.C.). Students should take a few minutes to read about and take notes about these early inventions on their [History of Inventions](#) student sheet.

To gauge their understanding, ask them questions like these:

- Which are the oldest inventions listed here?
(The calendar, pottery, and plywood.)
- Where was the oldest known piece of pottery found?
(In China.)
- About how many years ago is that?
(About 9,900 to 10,000 years ago.)
- Which invention is older, the wheel or toothpaste?
(The wheel.)
- Who was believed to first create toothpaste?
(The Egyptians.)
- How do you think the invention of _____ affected people's lives or changed societies at that time?
(Answers will vary.)

Now, have students focus on part of the timeline that represents all the A.D. inventions, ranging from paper (105 A.D.) to the DVD player (1995). Distribute the [Learning About Inventions: Facts](#) student sheet and inform the class that they will have to search these more recent inventions to answer questions about six of the inventions: paper, watch, Christmas lights, telephone, automobiles, and television. A [Learning About Inventions: Facts](#) teacher sheet has also been provided.

When students are finished with their assignment sheet, help them broaden their understanding by asking discussion questions based on the six inventions they learned about. Part of the purpose of the assignment sheet and this discussion is to help students realize that some earlier technologies were necessary for the development of succeeding inventions. Questions may include:

- Before paper was invented, how do you think people communicated over long distances?
(Answers will vary. While the Egyptians were able to use papyrus to write on, it seems that most people before the invention of paper did very little communicating in written form.)

- We have learned that the invention of the clock in the early 1300s led to the invention of the watch in the 1500s. What other kinds of clocks or time devices are there now (that have been invented since then)?
(Alarm clocks, clock radios, digital car clocks, clocks in computers and on cell phones, etc.)
 - You have also learned that the invention of the telephone in 1876 made it possible for such future inventions as intercoms, walkie-talkies, and the radio. What does the telephone have in common with, say, the walkie-talkie?
(Answers will vary. It is possible to communicate electronically over long distances using these hand-held devices.)
 - Do any of these six inventions use the same kind of parts or technology? If so, which?
(This may be a difficult question. If students have trouble, begin by pointing out how Christmas lights and televisions use lights and electricity to work. Also point out how watches and certain types of telephones need batteries to work. In addition, all the inventions except paper are basically machines that are built using things like metal, glass, plastics, wiring, etc.)
 - In what ways did the invention of the _____ help to change the lives of people and societies?
(Answers will vary. Encourage students to support their views with examples.)
 - Of these six inventions, which do you think has affected the way people live the most? Why?
(Answers will vary. Encourage students to support their views with examples.)
 - Which of these six inventions would be the hardest for you to live without? Why?
(Answers will vary. Encourage students to support their views with examples.)
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ASSESSMENT

Using the invention timeline, divide the class into groups of two or three. Then direct these groups to find one invention—from antiquity to the present—that shares related technology with at least one or two other inventions on the timeline (and that was necessary for the development of the succeeding inventions they identify). It may also be necessary to assign these groups certain technologies from different time periods.

During their search, each group should look for information based on the categories outlined below and present their findings to the class.

- Names and dates of the three inventions
- Description of why each invention was important
- Explanation of how each affected people's lives and shaped societies
- Explanation of how the first invention relates to or inspired the second

- Optional: Description of how the second invention relates to or inspired the third

Use Your Imagination—Bonus Question:

- What kind of invention might be developed in the future that could result from or be related to these two (or three) inventions?

EXTENSIONS

This lesson may be supplemented with the related lesson [Technology and Inequality](#).